

## What is Claimed:

1                   1.     A device for monitoring wear of dicing saw blade, the device  
2 comprising:

3                   a light source to emit light onto an end surface of the saw blade;

4                   a sensor for receiving a reflection of a portion of the light from the  
5 end surface of the saw blade; and

6                   a processor coupled to the sensor for determining wear of the saw  
7 blade based on an output from the sensor.

1                   2.     The device according to claim 1, wherein the sensor  
2 determines a distance to the edge of the saw blade based on triangulation.

1                   3.     The device according to claim 1, further comprising first  
2 focusing means for focusing the reflected light onto the plurality of sensors.

1                   4.     The device according to claim 1, wherein the sensor is a  
2 plurality of sensors.

1                   5.     The device according to claim 4, wherein each of the  
2 plurality of sensors determines a respective distance to the edge of the saw blade  
3 based on triangulation.

1                   6.     The device according to claim 4, further comprising a  
2 respective plurality of first focusing means for focusing the reflected light onto  
3 the plurality of sensors.

1                   7.     The device according to claim 1, wherein the monitoring  
2 device is mounted on a cooling block of the saw blade.

1                   8.     The device according to claim 1, wherein the light impacts  
2 the end of the saw blade substantially orthogonal to an axis of the saw blade.

1                   9.     The device according to claim 1, wherein the light impacts  
2 the surface of the saw blade substantially normal to a cutting edge of the saw  
3 blade.

1                   10.    The device according to claim 1, wherein the sensor is a  
2 position sensitive detector.

3                   11.    The device according to claim 1, wherein the sensor is a  
4 CCD detector.

1                   12.    The device according to claim 1, wherein the sensor  
2 produces an output based on a position of the reflected light on a surface of the  
3 sensor.

1                   13.    The device according to claim 1, wherein the emitter is a  
2 laser diode.

1                   14.    The device according to claim 1, wherein the emitter  
2 provides a light output having a wavelength of between about 600 to 800 nm.

1                   15.    The device according to claim 1, wherein the processor  
2 determines blade wear based on a measured distance between the light source and  
3 a cutting edge of the saw blade.

1                   16.    The device according to claim 15, wherein the processor  
2 stores successive wear data from the saw blade in a database.

1                   17.    The device according to claim 1, wherein the processor  
2 provides a warning output based on a predicted wear of the saw blade, the  
3 predicted wear determined from the successive wear data.

1                   18.    The device according to claim 1, wherein the predicted wear  
2 of the blade is based on a comparison of the successive wear information stored  
3 in the database.

1                   19.    The device according to claim 1, further comprising a  
2 monitor for displaying at least one of i) a wear rate of the saw blade, and ii) an  
3 estimated time for replacement of the saw blade.

1                   20.    The device according to claim 1, wherein saw blade wear is  
2 determined in real time.

1                   21. A method for monitoring wear of a dicing saw blade, the  
2 method comprising the steps of:

3                   emitting light onto an cutting edge of the saw blade;  
4                   receiving a reflection of a portion of the light from the edge of the  
5 saw blade; and  
6                   determining wear of the saw blade based on the reflected light.

1                   22. The method according to claim 21, further comprising the step  
2 of displaying at least one of i) a wear rate of the saw blade, and ii) an estimated  
3 time for replacement of the saw blade.

1                   23. A method for monitoring wear of a dicing saw blade, the  
2 method comprising the steps of:

3                   emitting light onto a cutting edge of the saw blade;  
4                   receiving a reflection of a portion of the light from the edge of the  
5 saw blade;  
6                   triangulating a distance to the saw blade base on the reflected light  
7 and  
8                   determining wear of the saw blade based on the triangulated  
9 distance.

1                   24. A device for monitoring wear of dicing saw blade, the device  
2 comprising:

3                   means to emit light onto a surface of the saw blade;  
4                   receiving means for receiving a reflection of a portion of the light  
5 from the surface of the saw blade; and  
6                   processing means coupled to the receiving means for determining  
7 wear of the saw blade based on an output from the receiving means.

2 display means for displaying at least one of at least one of i) a wear  
3 rate of the saw blade, ii) a diameter of the saw blade, and ii) an estimated time  
4 for replacement of the saw blade.

1            27. The device according to claim 25, further comprising means for  
2 predicting wear of the saw blade.

3 a light source to emit light onto the saw blade; and

4                   a sensor for receiving at least a portion of the light from the light  
5 source via the saw blade, the received portion of the light based on a wear of the  
6 saw blade,

7 wherein the device is mounted on a cooling block of the dicing saw.